



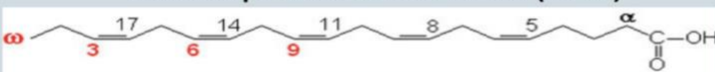

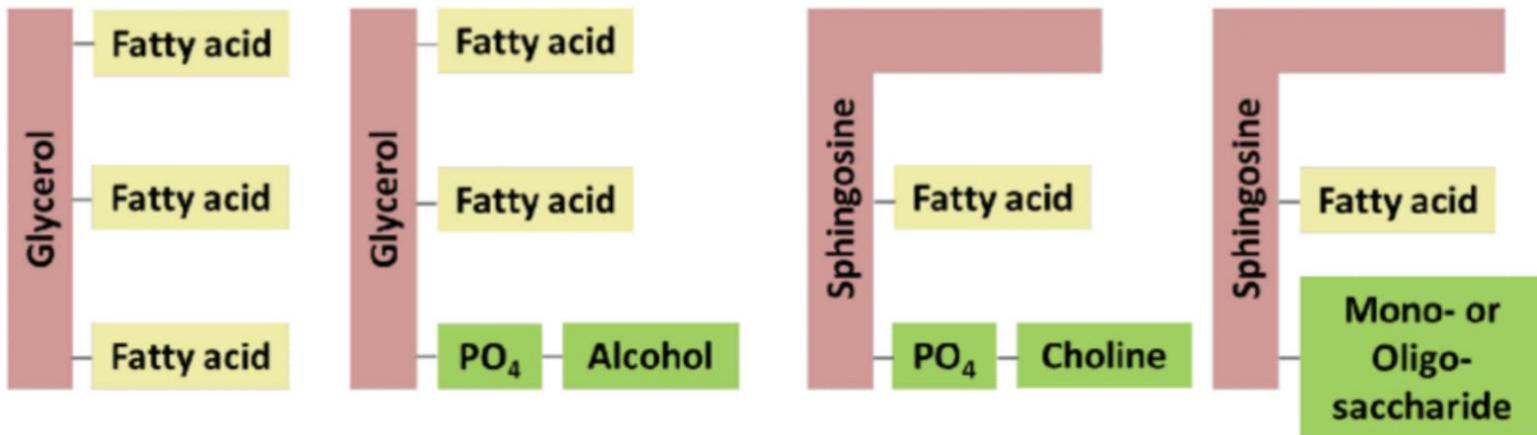
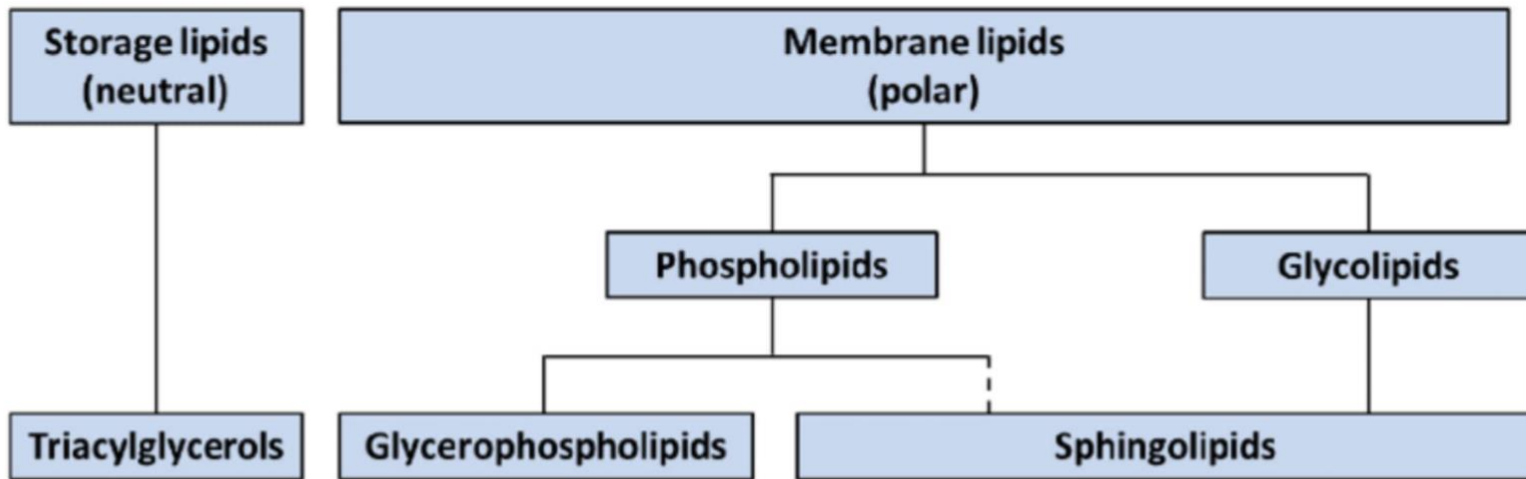


# Lipids

## Fatty acids ;

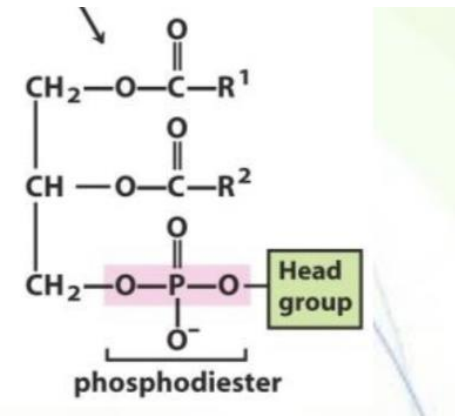
Numerical Symbol	Common Name and Structure	Comments
18:1 <sup>Δ9</sup>	<p>Oleic acid</p> 	Omega-9 monounsaturated
18:2 <sup>Δ9,12</sup>	<p>Linoleic acid</p> 	Omega-6 polyunsaturated
18:3 <sup>Δ9,12,15</sup>	<p>α-Linolenic acid (ALA)</p> 	Omega-3 polyunsaturated
20:4 <sup>Δ5,8,11,14</sup>	<p>Arachidonic acid</p> 	Omega-6 polyunsaturated
20:5 <sup>Δ5,8,11,14,17</sup>	<p>Eicosapentaenoic acid (EPA)</p> 	Omega-3 polyunsaturated (fish oils)
22:6 <sup>Δ4,7,10,13,16,19</sup>	<p>Docosahexaenoic acid (DHA)</p> 	Omega-3 polyunsaturated (fish oils)



# Glycerophospholipids:

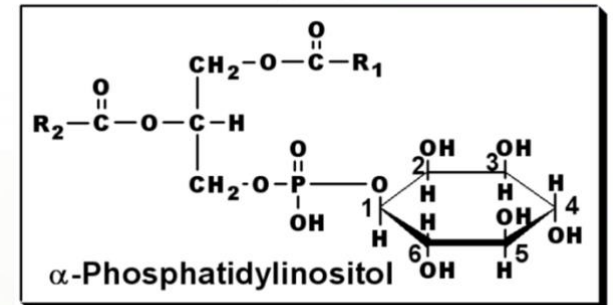
Phosphatidic acid	—	— H
Phosphatidylethanolamine	Ethanolamine	— CH <sub>2</sub> —CH <sub>2</sub> —NH <sub>3</sub> <sup>+</sup>
Phosphatidylcholine	Choline	— CH <sub>2</sub> —CH <sub>2</sub> —N(CH <sub>3</sub> ) <sub>3</sub> <sup>+</sup>
Phosphatidylserine	Serine	— CH <sub>2</sub> —CH(NH <sub>3</sub> <sup>+</sup> )—COO <sup>-</sup>

Glycerophospholipid



	Head group	
Phosphatidic acid	H	
Phosphatidylcholine Lecithin	Choline	
Phosphatidylethanolamine Cephalins	Ethanolamine	
Phosphatidylserine Cephalins	Serine	Abundant in brain
Phosphatidylinositol		sends messages across cell membranes Brain tissues

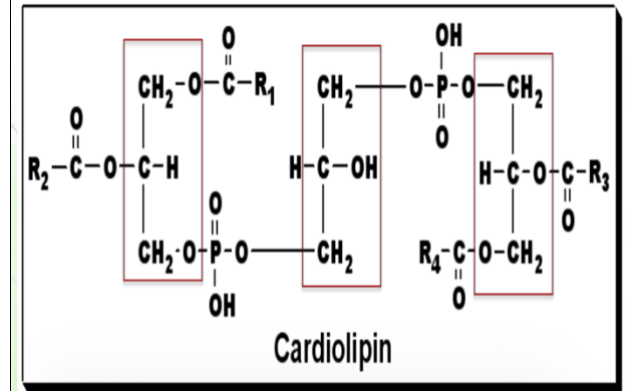
On hydrolysis by phospholipase C, phosphatidyl-inositol-4,5-diphosphate produces diacylglycerol (DAG) & inositol-triphosphate (IP3); which liberates calcium



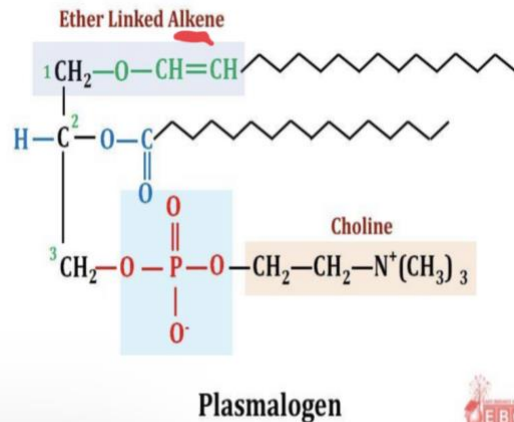
## Cardiolipin

3 molecules of glycerol, 4 fatty acids & 2 phosphate groups

Heart  
Inner membrane of mitochondria



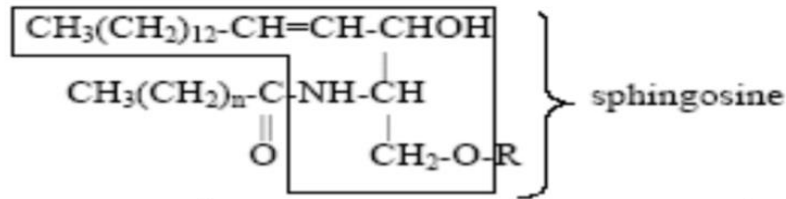
## Plasmalogens



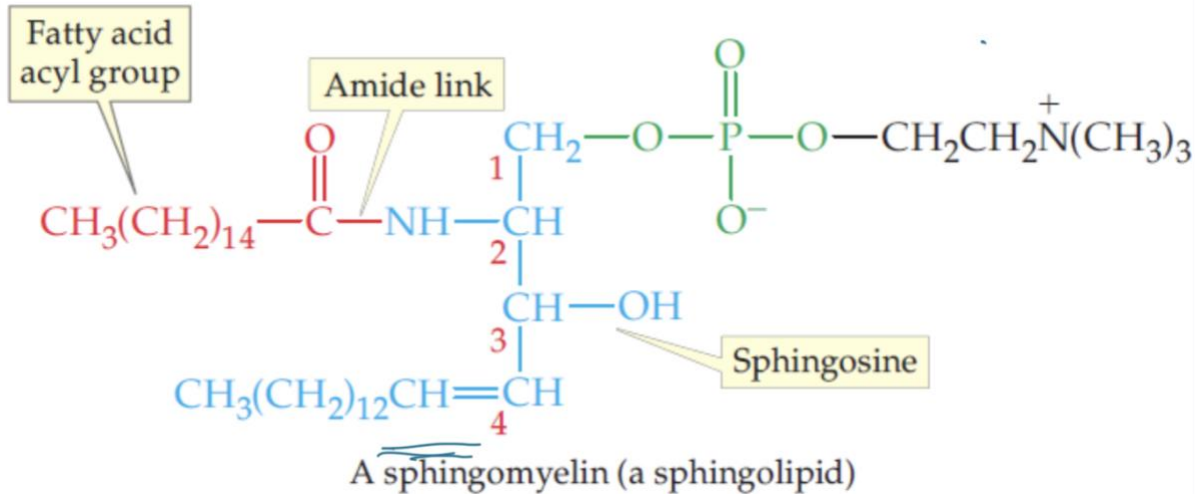
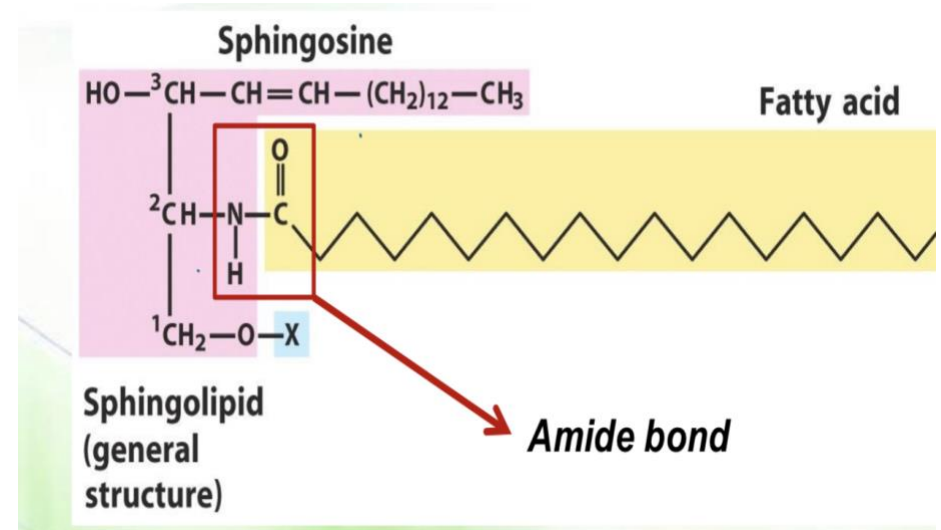
Precursor:  
Dihydroxyacetone phosphate  
Unsaturated fatty alcohol at C1 connected by ether bond  
In mammals: at C3; phosphate + ethanolamine or choline

Ethanolamine plasmalogen (myelin-nervous tissues)  
Choline plasmalogen (cardiac tissue)  
Platelet activating factor  
Serine plasmalogens

# Sphingolipids



Sphingolipid type	R group
Ceramide	H
Sphingomyelin	phosphocholine
Cerebroside	monosaccharide (galactose or glucose)
Globoside	two or more sugars (galactose, glucose, N-acetylglucosamine)
Ganglioside	three or more sugars including at least one sialic acid

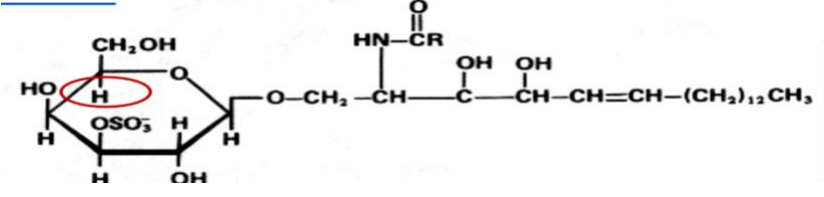


## Sphingomyelin

It is a sphingolipid that is a major component of the coating around nerve fibers. The group attached to C1 is a phosphocholine

# GLYCOLIPIDS:

There are three types of glycolipids.

Cerebroside	Glucose-galactose	Simplest glycolipid
Ganglioside	glucose, galactose, and N-acetylgalactosamine also contain sialic acid.	Gangliosides are bound by cholera toxin in the human intestine facilitating its endocytosis into the cells.
Sulfatide	Synthesized from galactocerebroside	
Globoside	glucose, galactose, and N-acetylgalactosamine	No sialic acid

